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## A SANITARY AND HEALTH SURVEY<sup>1</sup>

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ON account of the gratifying results in public health work during the past few years, and on account of the popular interest born of the realization of our ability actually to reduce morbidity and increase the span of life, it is easier to bring about public health reform in an American municipality than to secure any other kind of civic improvement.

Jealous as they are of personal liberty, the people have come to recognize that they must submit to a certain amount of inconvenience and even to scrutiny and investigation of their lives and personal affairs in the interest of the health of the community. The business man who is not in sympathy with many social reforms appreciates the practical utility of sanitary and public health supervision.

We have ceased to question the right of health authorities to extend their operations even far beyond the letter of the law, while opposition to private agencies working for sanitary betterment, even when accompanied by wide publicity of unenviable civic conditions, is usually inconsiderable. The intelligent portion of the community is fully capable of appreciating the benefits to be derived from such activities.

Hence, the sanitary survey may often be employed as an entering wedge in general civic betterment, leading naturally to increased interest in those other agencies for improvement which extend more intimately into the moral and social lives of the people, but all of which are more or less associated with public health work.

It is on this account, in my opinion, that the sanitary survey is the most important phase of general survey work just at this time, when municipalities are but beginning to recognize the value of systematic study of their underlying conditions.

<sup>1</sup> Read at the meeting of the Academy of Political Science, April 18, 1912.

Further, I am impressed by the fact that an enormous field is opening up in the study of the sanitary and other civic conditions in the smaller cities of the nation. The municipalities ranging from 10,000 to 100,000 in population represent an enormous number of people and present civic problems quite as definite, if not so extensive, as those to be found in any of the larger cities. And yet the civic student may find in almost any of the hundreds of smaller American cities an absolutely virgin field which so far has been shamefully neglected.

I feel that I should have no claim upon your attention this afternoon, that I should not be here to present a plan of survey, except on account of an experience which, it seems to me, should have been looked upon as commonplace enough, but which appears to have been regarded as somewhat unusual.

This experience was the study of the sanitary conditions of a city of from 50,000 to 60,000 population and the attainment of fairly satisfactory results without the expenditure of money. Before offering to you a definite plan of sanitary survey, I feel that it may be worth while to describe that simple investigation, the methods employed and the results attained.

I certainly have no intention here and in the presence of those who have done such brilliant things along those lines, of discussing anything of the theory or principles of survey work. I would suggest, however, that perhaps the very brilliancy of your accomplishment has prevented many municipalities from entering upon such undertakings.

With the Pittsburgh survey as the best known if not the only generally known specimen of its class, many persons have come to look upon the survey as a gigantic, technical and complicated institution, demanding a large amount of expert skill and considerable financial outlay for its accomplishment.

Wherever I have found intelligent city officials and citizens interested in civic betterment, I have found an earnest desire for more thorough knowledge and understanding of existing civic conditions; but a conviction that the survey is entirely beyond the reach of the average municipality.

In fact, at the time we undertook the sanitary study of Springfield, if someone had suggested such a thing as a "sani-

tary survey," I should have replied that we were not in a position financially or otherwise for such an ambitious undertaking.

As it was, we simply started out in Springfield to ascertain certain definite facts, and we had not the faintest idea how far or where our studies would carry us. We knew that the city had a higher typhoid-fever mortality than other cities of like size and similarly situated. We knew that we had houses and tenements which served as centers of infection of tuberculosis and other diseases. We realized that our infant mortality was too high. We started out simply with the purpose of ascertaining the causes of our undue morbidity and mortality that we might be enabled to take intelligent steps to decrease sickness and lower our death rate.

It was not until our work was completed that we realized that we had done anything which could be dignified by the term "sanitary survey." I cite this fact because I feel that there ought to be something done to change the general conception of the term "survey" and because I am convinced that we must reach a clearer definition of the term before many cities will undertake it.

I am also impressed with the belief that when a city sets out to learn definite things about itself and for a definite purpose, the results will be more satisfactory than when an attempt is made merely to apply a plan of study for no better reason than that other cities have done the same thing. That is, the desire for knowledge without the plan will come nearer landing us somewhere than the plan, however perfect, without the underlying intelligent desire for knowledge.

In the vaults of the city hall we recently unearthed several massive volumes, the results of a sanitary survey carried out in 1885 on a plan suggested by Dr. John H. Rauch, then secretary of the Illinois state board of health. The city council appropriated \$1,000 for the purpose and the work was carried out with most minute detail. The net result of this painstaking application of a survey plan consists of these big, clumsy volumes, dusty, moth-eaten and stowed away in a vault. In fact, when our work was done in 1910, no one recalled that a sanitary survey of the city had ever been carried out. This is

merely an example of a city going through the motions and carrying out a plan suggested by others, but without a desire for specific results.

In 1910 we awoke to the fact that Springfield had a typhoid-fever mortality of something over 40 per 100,000 of population. This mortality had been as high as 85 per 100,000 and the last year recorded showed a mortality of 52. That was twice as high as it should have been. Half of our deaths from this disease were apparently unnecessary.

Four million dollars had been expended by the city for water works and sewer system, and the mains extended to all sections of the town. We made repeated analyses of the city water, extending over a long period of time, and found that the public supply was always safe for domestic use. We had to go further to locate the cause of our excessive typhoid-fever mortality. Analyses were made of 150 samples from supposedly good wells. All but three were found to be dangerously polluted. Then the question arose as to the extent to which wells were used in the city and the cause of well pollution. On these points, as is true in practically every other city in the United States where wells are used, reliable information was entirely unobtainable.

There was but one thing left to do and that was to have the four underpaid, untrained but enthusiastic inspectors of the health department visit each of the 9,000 homes spread out over the 1,600 blocks of the city to locate every well and vault and ascertain the general sanitary conditions of all premises. It required two months to cover the city, the work being done in addition to the rather exacting routine duties of the department. The results plainly told the story of our typhoid fever.

The 9,000 homes of the city had 6,000 shallow wells, the pollution of which was guaranteed by 7,000 privy vaults. There were 6,000 polluted wells in the city, and the water mains and sewers were convenient to 5,000 of the premises that maintained them. That is, the use of 5,000 of the 6,000 polluted wells in the city was entirely unnecessary. From a sanitary standpoint the city's expenditure of \$4,000,000 was wasted.

I should make this statement about my home town with

reluctance were it not that Mr. Hiram Messenger has advised me, after studying the typhoid conditions of over thirty cities of from 40,000 to 100,000 people, that Springfield is now the only one in which he could obtain accurate data as to wells and well pollution.

The results of our investigation were not bound in red morocco and filed away to decay, nor were they hopelessly buried in dreary and unread reports. We prepared a large map of the city, large enough to show each house by number and the gross sanitary conditions of all premises. Each unsanitary lot was shown in red and every well, vault, sewer, water main, vacant lot, business property and public building was indicated by symbol or color.

We knew the facts; but we had to demonstrate them to get results. The map was shown at a luncheon to three hundred members of the chamber of commerce, with a talk on "The Truth About Springfield." The business men endorsed our work and the newspapers gave the facts wide publicity. Next the map was hung in the council chamber and the members of the city council were shown why we should have ordinances compelling property holders to connect their property with sewers and water mains. The ordinances were passed in three weeks, although we had vainly sought to secure such ordinances for over two years.

Then another interesting thing developed. Protest on the part of the business men gave way to serious consideration. The work had gone too far to be stopped and it became the part of wisdom to fall in line with it. Real-estate men advertised their property on its sanitary merits and money became harder to borrow on unsanitary property. For the first time in the community, sanitation took on a commercial value.

But the Springfield sanitary survey—if you choose to dignify it by that name—went a little further than a mere census of wells and vaults. During the house-to-house canvass the inspectors made notes of all unsanitary conditions and all nuisances and these were ordered remedied and abated.

They also noted all tenements and bad housing conditions and the data furnished by them along this line afforded the

basis for the housing investigations we have since carried on. We have studied, charted out and photographed the worst conditions in the city and we are now ready to do our part in convincing the Illinois General Assembly that there are slums in the smaller cities and that there is a crying need for good state housing laws.

In this housing investigation we took a tuberculosis census of the worst tenements and fumigated and disinfected as far as possible. We succeeded in improving the conditions of the worst tenements; but lack of state laws made satisfactory action impossible.

As I have stated, we were making this investigation entirely without a plan or system. Each undertaking when completed had pointed out something else that required attention, and at this juncture we found a new force urging us on. That was an aroused public interest. The better element of the people were watching to see what we would do next and the four daily newspapers of the city backed up our work and featured everything that was undertaken. This aroused interest was sufficient to hush all opposition.

We were now ready to consider our infant mortality. Our first effort was in the direction of an honest milk, containing a reasonable butter fat and total solids and free from preservatives. We recognized, however, that this was a commercial rather than a public health proposition.

We realized that "the amount of manure a milk contains is more important than the amount of butter fat" and we determined to visit and inspect all of the dairies supplying milk to the city. In this tour of inspection we attempted to teach the dairymen and farmers the prerequisites of pure and clean milk; but we warned all of them that inspections would be made from time to time and that the condition of all dairies would be made a matter of public record open to milk consumers.

This investigation of dairies was followed by inspection of restaurants and bakeries, the details of which cannot interest you here. The results, however, were gratifying to us.

We are now engaged upon an investigation of garbage collection and disposal, studying our own conditions and the methods

of other cities. We are trying to solve what I am inclined to regard as the liveliest public health problem of American municipalities—a problem, incidentally, which is not yet solved ideally by even the largest of cities.

The Springfield sanitary survey is not complete, nor will it be for several years to come. We are studying the town part by part and we are preserving all of our data in the hope that we may be able some day to show a complete sanitary survey of a smaller city. But every step is being taken with a definite plan in view. We have to produce results, and results that we can show the people.

The people, as a rule, will give active coöperation to work of this kind. They will be tolerant of criticism of local conditions. But after a while they will meet you with the essentially practical and entirely proper demand, "Now that you have given us all this undesirable publicity, what have you accomplished?" Incidentally, they are not to be satisfied with a story of "interesting data." The only way you can safely use a town as clinical material is to cure its sores.

For twelve years the average mortality from typhoid fever in Springfield had been something over 40 per 100,000 population. In 1910, the year our investigation was undertaken, it was 52. In 1911, the year after our agitation of polluted wells and the passage of sanitary ordinances, our typhoid mortality was in the twenties. The record of one year is not conclusive. Such a result immediately following sanitary agitation, however, is suggestive and encouraging.

In 1909, sixty-eight infants died from summer diarrhea; in 1910, even after we had a good commercial milk supply, there were sixty-four deaths. In 1911, after our dairy inspections, there were forty-one deaths. This may be coincidence, but it is suggestive.

My only excuse for burdening you with the details of our work in a small mid-western town is to make you realize that the small town has real sanitary and public health problems unappreciated by the people, to demonstrate that reasonably good results may be attained without an elaborate plan and without any considerable expenditure of money. The same excuse will justify this additional detail.



The collection of data in our work was entrusted to four inspectors, already overworked, and receiving \$60 per month—men entirely without sanitary training and three of them with little more than ward-school education. They have served as sanitary inspectors, dairy inspectors, housing inspectors, as conditions required, their only instruction being such as we could give them; but each man being fully informed as to what we were trying to do and why.

In addition to the salaries of these inspectors, which had been paid from time immemorial, the total cost of the survey and the sanitary map to the city of Springfield was less than \$100.

There is but one other thought in connection with our sanitary study. We were after a direct result, the reduction of morbidity and mortality. We are encouraged to believe that we have accomplished at least enough to justify the effort. But we now feel that we see other results more gratifying and far-reaching than we had anticipated.

Our work had been accompanied by unrestrained publicity. We accentuated the civic needs of the city in every possible way and we feel that we perhaps stimulated others to activity in their individual lines. We had demonstrated, perhaps, that civic improvement was not so difficult to bring about as had been generally believed and we had possibly stimulated a general spirit of investigation.

At any rate, whether our sanitary investigations had anything to do with it or not, a great many things have come about during the past two years. A detention home has removed children from the jail and has simplified the work of an excellent trained probation officer. A tuberculosis association of 1,000 members operates a dispensary and employs visiting nurses. Medical inspection of school children is established. The almshouse of Sangamon County is being thoroughly studied from a medical and sociological standpoint and provision is being made for county care of indigent consumptives. The dispensing of county charity has been placed in better hands. But most important, the people are awakened to the necessity of a thorough knowledge of local conditions, and a broad and sweeping

survey of the city—a real survey this time—is being considered and is practically assured.

The experience in Springfield, the gratifying results attained without the employment of expert skill, has made me believe that similar results may be attained by other cities either through the agency of their health departments or through the activities of private agencies. The survey in Springfield was carried out without a definite plan of action, and the following scheme of study was the result rather than the foundation of the work.

Unquestionably a well defined plan will serve to simplify the survey, will render it more systematic and will prevent ineffective labor in various directions. The one submitted here is little more than a skeleton in the elaboration of which we are now engaged. It may serve in its present form, however, to suggest a rather simple and consecutive line of action which will prove helpful to those about to engage in work of the kind.

#### SCHEME OF A SANITARY SURVEY

##### I. STUDY OF MORBIDITY AND MORTALITY FROM COMMUNICABLE DISEASES

No intelligent work to reduce morbidity and mortality can be undertaken until we know the present morbidity and mortality and the averages for several years past.

In most instances morbidity from communicable diseases may be ascertained from the records of the local health department. Such records, however, are frequently faulty and incomplete. Under such circumstances, the present morbidity may generally be estimated after interviewing all members of the local medical profession. Morbidity records for the past will be unattainable.

Mortality records for many years past should be obtained from the local health department. If the municipality has no registration of deaths, the desired data can usually be obtained from the state registrar of vital statistics or from the state board of health.

After securing the present and past average mortality from preventable diseases, these should be compared with similar

figures from other municipalities as near the size and existing under as nearly the same conditions as possible. Much valuable information for purposes of comparison may be obtained from the last reports of the United States Census Office dealing with mortality statistics. It is only by such comparison of figures that we can determine whether the local mortality is higher than it should be.

1. *Diseases to be Studied*—(a) Typhoid fever; (b) tuberculosis; (c) malaria; (d) yellow fever; (e) small-pox; (f) chicken-pox; (g) diphtheria; (h) scarlet fever; (i) measles; (j) whooping cough; (k) industrial diseases peculiar to the community; (l) summer diarrhea of infants; (m) accidental deaths.
2. *Sources of Information*—Local health department; state health department; local physicians; reports of United States Census Bureau.

NOTES—Seek out the cause for every decided deviation from the normal or average mortality. Such deviations are at times due to outside influences bearing in no way upon local sanitary conditions.

Ascertain total mortuary figures. Do not accept death estimates in percentages. One death in the community may affect the rate 100 per cent.

## II. WATER SUPPLY AND SEWAGE DISPOSAL

(Special relation to typhoid fever.)

### 1. *Source of Municipal Water Supply*

#### (a) Results of last analyses.

A single analysis should not be accepted as final. Conditions in an unprotected supply often change from season to season.

#### (b) Possible pollution of the public supply at source.

Information should be obtained from the municipal water company, the local water department or the local health department. It would be well to inspect personally the source of supply.

NOTE—If analyses have not been made, samples should be

secured and sent to laboratories for analysis. In several states, the state water survey, the state university or other state departments will make analyses of local water supplies without charge. Reliance should not be placed on the so-called "simple water tests."

## 2. *Private Wells*

(a) Extent to which they are used. (If used at all, it will be impossible to ascertain the extent without a house-to-house canvass. The same is true with privy vaults. See below.)

(b) Analysis of water from presumably good wells.

It is never worth while to make analyses of water from wells which are obviously polluted.

## 3. *Privy Vaults* (Important on account of pollution of wells)

(a) Extent to which used.

(b) Enforcement of ordinances or regulations as to the distance of vaults from wells or cisterns.

(c) General construction of vaults to prevent soil pollution.

## 4. *Sewer System*

(a) Extent throughout the city.

Location of those sections not reached by sewer.

(b) Location of outlets of sewers.

(i) Danger to people of this community.

(ii) Danger to other municipalities.

(c) Extent to which sewers are used by those to whom they are available.

NOTE—Information as to the sewer system and the sewer outlets may be obtained from the city engineer or the department of public works. The extent to which sewers are used by those to whom they are available can often be determined only by house-to-house canvass.

## 5. *Methods of Sewage Disposal*

(a) Is sewage "treated" before discharge or is it discharged in its raw state? If treated, what is the method of treatment?

(b) Present and future dangers of the system employed.

6. *Pollution of Soil*

- (a) By privy vaults.
- (b) By polluted ponds or streams receiving sewage.
- (c) By sewers with loose joints.
- (d) By tile or surface drains. Private sewers.

## III. ALLEYS

(Special relation to fly-borne diseases; nuisances from decomposition of organic waste matter; dust and mosquitoes.)

Remember that, as a general principle, the alley belongs to the municipality and that it is unlawful to place ashes, manure, garbage or any other material therein.

1. *Ashes*

- (a) Extent to which they are placed in alleys. Loose or in containers.
- (b) Disposal of ashes.

2. *Manure* (breeding place for flies)

- (a) Extent to which it is placed in alleys.
- (b) Loose or in tight, screened boxes.
- (c) Frequency with which it is removed.

To guarantee against the breeding of flies, manure should be removed at least once a week from alleys and premises.

- (c) Disposal of manure.

- (i) Dumps (sources of danger).
- (ii) Burned.
- (iii) Distribution to farmers for fertilizer.

In some cities this is carried out systematically and satisfactorily.

3. *Garbage* (nuisance and flies)

Presence in alleys (see Section IV)

4. *Alley Grade*

Drainage into yards.

Low places breeding-ground of mosquito.

Permitting the use of alleys for even the temporary disposal of ashes often results in raising the grade of the alley above that of surrounding

property, causing the water to drain into nearby yards.

NOTE—In the house-to-house canvass proposed in this plan, all bad alley conditions should be noted and reported to the health department or to the department of streets and alleys.

#### IV. GARBAGE DISPOSAL

(“The livest public health problem of American municipalities.”)

(Special relation to fly-borne diseases, soil pollution. Dumps bear a close relation to contagious diseases.)

##### 1. *Handling Garbage at Home*

- (a) Are special cans or containers required?
- (b) Destroying garbage at home.
  - (i) To what extent practised?
  - (ii) Method employed.
- (c) Separation of refuse into garbage, ashes and rubbish.
- (d) Wrapping garbage in paper (dry garbage).

##### 2. *Collection of Garbage*

- (a) Public or private collection.
  - (i) Cost to householder.
  - (ii) Frequency of collection.
  - (iii) Specially constructed garbage wagons.
  - (iv) Regulations concerning collection.

##### 3. *Disposal of Garbage*

- (a) Dumps.
  - (i) Location of dumps.
  - (ii) Character of waste taken to dumps.
  - (iii) Policing dumps.

NOTES—The municipality has no more right to permit the dumping of decomposable waste near to the home of a citizen than it has to empty its sewers near to the home of a citizen.

The recovery of articles from the dumps, as is often done by the poor, is a common means of carrying contagious diseases into those homes in which such diseases are most

difficult to locate and control. Much of the most usable salvage in a city's waste has been discarded on account of contagious and infectious disease in the home.

(b) Feeding garbage.

(i) Distributing garbage to farmers.

(ii) Municipal hog-feeding.

Not a sanitary or practicable plan in the ordinary climate.

(c) Incineration.

(i) Incineration of garbage alone.

(ii) Incineration of all waste.

(iii) Incineration with artificial fuel.

(iv) Burning garbage and other waste with its own combustible material.

**NOTES**—The ideal method of refuse disposal is incineration of all kinds of waste—garbage, manure, ashes and rubbish. In this way we avoid the necessity of dumps of any kind in the community.

Ideal incineration implies the utilization of the fuel content of the refuse itself. In this way sufficient heat may be obtained to produce steam for power in municipal plants.

(d) Reduction of garbage.

(i) By public or private company.

(ii) Materials regained from garbage.

(iii) Revenues to the city from reduction.

(iv) Cost to the city.

## V. STAGNANT POOLS AND OPEN CISTERNS

(Special relation to the mosquito and to malaria and yellow fever. More important in southern cities.)

(a) Location of stagnant ponds and pools.

(b) Best means of draining same.

(c) Screening cisterns.

## VI. HOUSING

(Special relation to tuberculosis, contagious diseases, immorality, physical inefficiency, deficient education, crime and children).

1. *General Survey of Housing*

In the house-to-house survey, all bad housing conditions should be located and noted for future investigation.

2. *Intensive Study of Housing*

The study of individual houses and blocks indicated in the general housing study as being undesirable.

3. *Yard space*

(a) Percentage of lot unoccupied by buildings.

(i) Grass and trees.

(ii) Paved.

(iii) Drainage and sanitary conditions.

(iv) Uses of yard space.

4. *Light* (A study of each room in undesirable buildings used for dwelling purposes)

(a) Outside rooms.

(b) Light wells.

(c) Sky lights.

(d) Dark rooms and uses of dark rooms.

5. *Ventilation* (Studied according to above outlined scheme for light)

6. *Business Houses*

Relationship of dwellings or tenements to saloons, immoral resorts, business houses and industries. Dwellings over stables.

7. *Home Industries*

8. *Congestion*

(a) Number of inmates.

(b) Room congestion.

(c) Roomers, boarders, homes and light housekeeping.

9. *Water Supply*

(a) Source.

(b) Convenience to living quarters.

10. *Sewage*

11. *Condition of Plumbing*

This study should include observation of plumbing conditions and facilities for ordinary cleanliness.



12. *Disposal of Garbage and Waste*13. *Nationality and National Traits*14. *Children*

Number of children in each dwelling, with note as to the manner in which they live, association with immorality, sanitary conditions, *etc.*

15. *General Sanitation*16. *Transient or Permanent Residents*

NOTES—In collecting housing data the name of the landlord and agent of each piece of property should be obtained.

Each dwelling, building or block studied should be mapped or platted out.

Photographs should be obtained of the worst conditions.

## VII. RESTAURANTS, BAKERIES, BUTCHER SHOPS

1. *Sanitary Conditions*

(a) Cleanliness.

(b) Plumbing.

(i) Condition.

(ii) Location in relation to foodstuffs.

(c) Living quarters near to place of food handling.

(d) Protection from flies.

(e) Health of workers in foods.

(f) Spitting.

(g) Care and protection of food supplies.

## VIII. MILK SUPPLY

(Special relation to infant mortality, tuberculosis and contagious diseases.)

1. *Chemical Content* (Butter fats and total solids)

(a) How often tested by local authorities.

(b) Collection from homes of consumers or on open market and testing privately.

(c) Freedom from preservatives.

A milk containing the legal amount of fats and solids and free from preservatives is merely a good commercial milk. The greatest importance attaches to the amount of filth the milk contains.

## 2. *Dairy Inspection*

- (a) Health and condition of cows.
  - (i) General health.
  - (ii) Tuberculin testing.
  - (iii) Cleanliness.
  - (iv) Feed.
- (b) Condition and construction of barns.
- (c) Condition and cleanliness of milk houses.
- (d) Conditions and method of shipping.
  - (i) Cleansing cans.
  - (ii) Rapid reduction of temperature.
  - (iii) Pasteurization.
- (e) Water supply.

## 3. *Bottling*

- (a) Sterilization of bottles.
- (b) Hand or machine bottling.
- (c) Place of bottling.
  - (i) At the farm (good).
  - (ii) At the milk depot (unsatisfactory).
  - (iii) In the milk wagon (intolerable).

## 4. *Health of Employes*

Contagious diseases are often transmitted by the milk supply. Scarlet fever and diphtheria have been traced back to this disease among milk handlers or their families.

## 5. *Milk Depots*

Methods of handling milk and general sanitary conditions.

## 6. *Infant Mortality*

Ascertain the source of milk supply in all cases where there has been infant mortality in the family.

# IX. METHODS OF STUDY

## 1. *House-to-House Canvass*

This is the foundation of every satisfactory sanitary survey. Study each house and yard and note all wells, privy vaults and the general sanitary conditions. Information is also gathered during this house-to-house canvass upon which to base the future investigation of water supply and sewage;

alleys; garbage disposal; stagnant pools and cisterns; housing; restaurants and bakeries.

## 2. *Sanitary Map*

A large map of the city should be prepared with each lot large enough to show house number, wells, vaults and all gross sanitary conditions. This map should also show the paved streets, sewer system and water mains.

The making of the map teaches a great deal about the city as a whole and brings together the accumulated data in a form which can be shown to the people or to the city officials.

## 3. *Study Water Supply, Sewers, Topography, etc.*

Study of the data in the office of the city engineer and department of public works.

## 4. *Intensive Study of the Various Subdivisions of Work*

- (a) Visit all dumps and garbage-disposal plants.
- (b) Study all housing conditions and plat out all blocks, houses or rooms investigated.
- (c) Inspect all dairies supplying milk to the community, using the government score card as a guide.
- (d) Visit and inspect all restaurants, bakeries, etc.

## X. STUDY OF EXISTING LAWS AND ORDINANCES

Study the state laws under which the municipality is given its right of public health control.

Study the city ordinances to see what improvements can be brought about by merely enforcing existing laws.

## XI. NEW ORDINANCES

Ascertain what faulty conditions will require new ordinances to bring about their improvement.

Study ordinances of other cities which are bringing about satisfactory results in these lines.

## XII. STUDY OF EXISTING HEALTH DEPARTMENT

(See the standards of public health efficiency in an article by the writer, "The Inefficiency of Municipal Health Departments," published in *The American City*, August, 1911).

1. *Duties of the Health Department under the Ordinances*
2. *What Ordinances are not Enforced? (Ascertain why).*
3. *Study of Special Functions of the Department*
  - (a) Water analysis.
  - (b) Milk inspection.
  - (c) Quarantine.
  - (d) Reports of communicable diseases.
  - (e) Isolation hospital.
  - (f) Abatement of nuisances.
  - (g) Registration of vital statistics.
  - (h) Constructive work.
4. *Provisions for Efficient Service*
  - (a) Qualifications of health officer.
  - (b) Salary and assistants.
  - (c) Reasonable appropriations.
  - (d) Freedom from politics. Civil service.

### XIII. METHODS OF PUBLICITY

- (a) The sanitary map.
- (b) Newspapers.
- (c) Expositions and exhibits.
- (d) Bulletins and circulars.
- (e) Public meetings.
- (f) Churches.

### XIV. DEALING WITH CITY OFFICIALS

Coöperation if possible.

Meet opposition by a showing of fact and overcome opposition by publicity.

### XV. THE SURVEY STAFF

- (a) A competent physician, preferably with some public health training.
- (b) A public-spirited and competent lawyer.
- (c) Staff of paid or volunteer inspectors to collect data.
- (d) A practical plumber, or better, a sanitary engineer.
- (e) Clerical help and draftsman.